

CLAIMS

1. A photoelectric converting apparatus comprising:

a photoelectric converting element;

5 a resetting transistor of which a source is connected to said photoelectric converting element and a drain is connected to a resetting power source;

a readout transistor of which a gate is connected to said photoelectric converting element
10 and a drain is connected to a readout power source;

a signal line connected to a source of said readout transistor;

a selecting transistor connected between said readout power source or said signal line and said
15 readout transistor; and

a constant current source connected to said signal line.

2. A photoelectric converting apparatus according to claim 1, wherein said photoelectric
20 converting element, said readout transistor, said signal line and said constant current source are formed on a single insulating substrate.

3. A photoelectric converting apparatus according to claim 1, further comprising:

25 readout means which is connected to said signal line;

wherein said constant current source is

provided, on said signal line, in a position spaced more from said readout means than from readout transistor.

4. A photoelectric converting apparatus
5 according to claim 3, wherein said readout means includes an analog multiplexer connected to said signal line.

5. A photoelectric converting apparatus according to claim 4, wherein said analog multiplexer
10 is formed by a thin film transistor constituted of amorphous silicon or polysilicon on an insulating substrate same as that for said readout transistor.

6. A photoelectric converting apparatus according to claim 1, wherein said constant current
15 source includes a constant current source transistor of which a gate is connected to a power supply for the constant current source.

7. A photoelectric converting apparatus according to claim 6, wherein said power supply for
20 the constant current source provides the gate of said constant current source transistor with a voltage satisfying a relation $V_{ds} > V_{gs} - V_{th}$, in which V_{ds} is a drain-source voltage, V_{gs} is a gate-source voltage and V_{th} is a threshold voltage.

25 8. A photoelectric converting apparatus according to claim 1, wherein said constant current source includes a constant current source transistor

in which a gate and a source are mutually connected.

9. A photoelectric converting apparatus according to claim 1, wherein said constant current source includes a constant current source transistor
5 in which a gate and a source are connected across a resistor.

10. A photoelectric converting apparatus according to claim 1, wherein at least one selected from a group consisting of said resetting transistor,
10 said readout transistor, said selecting transistor and said constant current source is formed utilizing an amorphous silicon layer or a polysilicon layer.

11. A photoelectric converting apparatus according to claim 1, further comprising a phosphor
15 layer which absorbs a radiation and emits a light of a wavelength region detectable by said photoelectric converting element.

12. A photoelectric converting apparatus according to claim 1, wherein said photoelectric
20 converting element is constituted of a PIN photodiode or a MIS sensor.

13. A photoelectric converting apparatus according to claim 1, wherein said photoelectric
25 converting element is a direct photoelectric converting element which directly converts a radiation into a charge.

14. A photoelectric converting apparatus

according to claim 13, wherein said direct photoelectric converting element is constituted of a material selected from a group consisting of amorphous selenium, gallium arsenide, gallium phosphide, lead iodide, mercury iodide, CdTe and CdZnTe.

15. A photoelectric converting apparatus comprising:

a two-dimensional array of a plurality of pixels each of which includes:
10 a photoelectric converting element;
a resetting transistor of which a source is connected to said photoelectric converting element and a drain is connected to a resetting power source;
15 a readout transistor of which a gate is connected to said photoelectric converting element and a drain is connected to a readout power source; and
a selecting transistor connected between said readout power source or a signal line and said 20 readout transistor;

a plurality of common signal lines connected to said plural pixels; and

a constant current source connected to said common signal lines.

25 16. An X-ray image pickup system comprising a photoelectric converting apparatus according to claim 1 or 15, an X-ray generating apparatus and control

means;

wherein said control means controls functions
of the X-ray generating apparatus and the
photoelectric converting apparatus thereby reading an
5 X-ray image transmitted by an object.